

55	0.0896	R23, I	R33	R11	0.47	0.086	High
56	0.0861	R18, I	R36	R13	0.47	0.086	High
57	0.1000	R23, I	R33	R13	0.47	0.086	High
Package	Glazing Factor	R wall	R ceiling	R crawl	U door	U overall	HVAC Equipment Efficiency
58	0.0546	R18, I	R38	R19	0.47	0.070	Normal
59	0.0784	R15, I	R30	R19	0.47	0.083	High
60	0.0880	R15, I	R38	R19	0.47	0.083	High
Package	Glazing Factor	R wall	R ceiling	R slab	U door	U overall	HVAC Equipment Efficiency
61	0.0640	R23, I	R36	R5	0.47	0.103	Normal
62	0.0896	R15, I	R36	R5	0.47	0.121	High
63	0.0960	R15, I	R38	R5	0.47	0.121	High
Package	Glazing Factor	R wall	R ceiling	R heated-slab	U door	U overall	HVAC Equipment Efficiency
64	0.0640	R23, I	R34	R5	0.47	0.101	Normal
65	0.0840	R15, I	R31	R5	0.47	0.121	High
66	0.0920	R15, I	R33	R5	0.47	0.121	High
Package	Glazing Factor	R wall	R ceiling	R floor	U door	U overall	HVAC Equipment Efficiency
67	0.0480	R20, I	R44	R19	0.35	0.065	Normal
68	0.0728	R20, I	R36	R19	0.47	0.077	High
69	0.0560	R14, I	R38	R19	0.47	0.078	High

Table B-3 Prescriptive packages, Electric Heat, Structural Sheathing Only

Package	Glazing Factor	R wall	R ceiling	R basement	U door	U overall	HVAC Equipment Efficiency
E 70	0.0396	R21	R37, RT	R19	0.35	0.059	Normal
E 71	0.0429	R21	R42, RT	R19	0.35	0.059	Normal
E 72	0.0520	R21	R49	R13	0.35	0.068	High
E 73	0.0640	R19	R42, RT	R19	0.35	0.068	High
E 74	0.0693	R21	R49, RT	R19	0.47	0.068	High
Package	Glazing Factor	R wall	R ceiling	R crawl	U door	U overall	HVAC Equipment Efficiency
E 75	0.0429	R21	R54, RT	R30	0.35	0.054	Normal
E 76	0.0480	R21	R45, RT	R19	0.35	0.062	High
E 77	0.0627	R21	R54, RT	R30	0.47	0.062	High
Package	Glazing Factor	R wall	R ceiling	R slab	U door	U overall	HVAC Equipment Efficiency
E 78	0.0396	R26	R51, RT	R10	0.35	0.083	Normal
E 79	0.0480	R21	R49	R7	0.35	0.095	High
E 80	0.0528	R21	R49, RT	R5	0.35	0.095	High
Package	Glazing Factor	R wall	R ceiling	R floor	U door	U overall	HVAC Equipment Efficiency
E 81	0.0363	R21	R54, RT	R30	0.35	0.052	Normal
E 82	0.0520	R21	R49	R30	0.35	0.060	High
E 83	0.0528	R21	R44, RT	R30	0.47	0.060	High

Table B-4 Prescriptive packages, Electric Heat, Insulating Sheathing

Package	Glazing Factor	R wall	R ceiling	R basement	U door	U overall	HVAC Equipment Efficiency
E 84	0.0480	R25, I	R48, RT	R16	0.35	0.059	Normal
E 85	0.0495	R25, I	R48, RT	R16	0.35	0.059	Normal
E 86	0.0462	R28, I	R40	R16	0.35	0.059	Normal
E 87	0.0429	R25, I	R36	R18	0.35	0.059	Normal
E 88	0.0528	R23, I	R58, RT	R18	0.35	0.059	Normal
E 89	0.0462	R25, I	R42	R18	0.35	0.059	Normal
E 90	0.0560	R25, I	R46, RT	R10	0.35	0.068	High
E 91	0.0640	R23, I	R48, RT	R13	0.35	0.068	High
E 92	0.0600	R25, I	R42	R13	0.35	0.068	High
E 93	0.0600	R23, I	R37	R18	0.47	0.068	High
E 94	0.0759	R25, I	R46, RT	R18	0.47	0.068	High
Package	Glazing Factor	R wall	R ceiling	R crawl	U door	U overall	HVAC Equipment Efficiency
E 95	0.0429	R25, I	R48, RT	R23	0.35	0.054	Normal
E 96	0.0520	R23, I	R38	R23	0.35	0.062	High
E 97	0.0561	R25, I	R44	R23	0.47	0.062	High
Package	Glazing Factor	R wall	R ceiling	R slab	U door	U overall	HVAC Equipment Efficiency
E 98	0.0396	R25, I	R48, RT	R10	0.35	0.083	Normal
E 99	0.0560	R23, I	R44	R7	0.35	0.095	High
E 100	0.0594	R25, I	R46, RT	R5	0.47	0.095	High
Package	Glazing Factor	R wall	R ceiling	R floor	U door	U overall	HVAC Equipment Efficiency
E 101	0.0429	R25, I	R46, RT	R30	0.35	0.052	Normal
E 102	0.0560	R23, I	R44	R30	0.35	0.060	High
E 103	0.0627	R25, I	R44, RT	R30	0.47	0.060	High

Default Assembly R and U Value Tables

(All U-values include framing factors, finish materials and air films.)

Table 1. Ceiling U-Values^(a)

Insulation R-Value	Standard Truss U-Value	Raised Truss ^(b) U-Value	Insulation R-Value	Standard Truss U-Value	Raised Truss ^(b) U-Value
R-0	0.568	0.568	R-33	0.033	0.029
R-7	0.119	0.119	R-34	0.032	0.028
R-8	0.108	0.108	R-35	0.032	0.028
R-9	0.098	0.098	R-36	0.031	0.027
R-10	0.089	0.089	R-37	0.031	0.026
R-11	0.082	0.082	R-38	0.030	0.025
R-12	0.076	0.076	R-39	0.030	0.025
R-13	0.070	0.070	R-40	0.029	0.024
R-14	0.066	0.066	R-41	0.029	0.024
R-15	0.062	0.061	R-42	0.028	0.023
R-16	0.059	0.058	R-43	0.028	0.023
R-17	0.056	0.055	R-44	0.027	0.022
R-18	0.053	0.052	R-45	0.027	0.022
R-19	0.051	0.049	R-46	0.027	0.021
R-20	0.048	0.047	R-47	0.026	0.021
R-21	0.047	0.045	R-48	0.026	0.020
R-22	0.045	0.043	R-49	0.026	0.020
R-23	0.043	0.041	R-50	0.026	0.020
R-24	0.042	0.040	R-51	0.025	0.019
R-25	0.040	0.038	R-52	0.025	0.019
R-26	0.039	0.037	R-53	0.025	0.019
R-27	0.038	0.035	R-54	0.025	0.018
R-28	0.037	0.034	R-55	0.024	0.018
R-29	0.036	0.033	R-56	0.024	0.018
R-30	0.035	0.032	R-57	0.024	0.018
R-31	0.034	0.031	R-58	0.024	0.017
R-32	0.034	0.030	R-59	0.024	0.017

(a) R-values represent the sum of the ceiling cavity insulation plus the R-value of insulating sheathing (if used). For example, R-19 cavity insulation plus R-2 sheathing is reported as R-21 ceiling insulation. For ventilated ceilings, insulating sheathing must be placed between the conditioned space and the ventilated portion of the roof (typically applied to the trusses or rafters immediately behind the drywall or other ceiling finish material).

(b) To receive credit for a raised truss, the insulation must achieve its full insulation thickness over the exterior walls.

Table 2. Wood-Frame Wall U-Values^(a,b)

Insulation R-Value^(c)	16-in. O.C. Wall U-Value	24-in. O.C. Wall U-Value
R-0	0.238	0.241
R-7	0.105	0.104
R-8	0.099	0.097
R-9	0.094	0.092
R-10	0.090	0.088
R-11	0.089	0.087
R-12	0.085	0.083
R-13	0.082	0.080
R-14	0.079	0.077
R-15	0.077	0.074
R-16	0.066	0.064
R-17	0.064	0.062
R-18	0.062	0.060
R-19	0.060	0.059
R-20	0.059	0.057
R-21	0.057	0.056
R-22	0.056	0.054
R-23	0.055	0.053
R-24	0.054	0.052
R-25	0.053	0.051
R-26	0.052	0.050
R-27	0.051	0.049
R-28	0.050	0.048

(a) U-values are for uncompressed insulation.

(b) U-values in this Table were developed for wood-frame walls, but the 16-in. O.C. Wall U-Value column can also be used for above-grade concrete, masonry, and log walls. Mass wall R-value to U-value conversion tables are planned for future versions of the MECcheck Manual.™

(c) Wall R-values are the sum of the cavity insulation plus insulating sheathing (if used).

Table 3. 16-in. O.C. Metal-Frame Wall U-Values and Equivalent Prescriptive Package Wall R-Values (Use the U-values below for the System Design Method of the Energy Worksheet. Use the equivalent R-value below to choose an Energy Worksheet Prescriptive Package with a wall R-value that is less than or equal to it. If you have an equivalent R-value without an "I" listed after it, then you must use a Package wall R-value without an "I" designation.)

Cavity R-Value	Insulating Sheathing R-Value										
	R-0	R-1	R-2	R-3	R-4	R-5	R-6	R-7	R-8	R-9	R-10
R-0	U-0.270	U-0.258	U-0.205	U-0.170	U-0.146	U-0.127	U-0.113	U-0.101	U-0.092	U-0.084	U-0.078
R-11	U-0.120	U-0.118	U-0.106	U-0.096	U-0.087	U-0.080	U-0.074 R15	U-0.069 R15I	U-0.065 R16I	U-0.061 R18I	U-0.057 R20I
R-13	U-0.114	U-0.111	U-0.100	U-0.091	U-0.084	U-0.077 R15	U-0.072 R15	U-0.067 R15I	U-0.063 R17I	U-0.059 R19I	U-0.056 R22I
R-15	U-0.109	U-0.107	U-0.096	U-0.088	U-0.081	U-0.075 R15	U-0.070 R15	U-0.065 R16I	U-0.061 R18I	U-0.058 R19I	U-0.054 R22I
R-19	U-0.101	U-0.099	U-0.090	U-0.083	U-0.077 R15	U-0.071 R15	U-0.066 R15I	U-0.062 R17I	U-0.059 R19I	U-0.055 R20I	U-0.052 R22I
R-21	U-0.098	U-0.096	U-0.088	U-0.081 R13	U-0.075 R15	U-0.070 R15	U-0.065 R16I	U-0.061 R18I	U-0.058 R19I	U-0.054 R20I	U-0.052 R22I
R-25	U-0.094	U-0.093	U-0.085	U-0.078 R13	U-0.073 R15	U-0.068 R15I	U-0.063 R17I	U-0.060 R19I	U-0.056 R20I	U-0.053 R20I	U-0.051 R23I

Table 4. 24-in. O.C. Metal-Frame Wall U-Values and Equivalent Prescriptive Package Wall R-Values (Use the U-values below for the System Design Method of the Energy Worksheet. Use the equivalent R-value below to choose an Energy Worksheet Prescriptive Package with a wall R-value that is less than or equal to it. If you have an equivalent R-value without an "I" listed after it, then you must use a Package wall R-value without an "I" designation.)

Cavity R-Value	Insulating Sheathing R-Value										
	R-0	R-1	R-2	R-3	R-4	R-5	R-6	R-7	R-8	R-9	R-10
R-0	U-0.270	U-0.258	U-0.205	U-0.170	U-0.146	U-0.127	U-0.113	U-0.101	U-0.092	U-0.084	U-0.078 R13
R-11	U-0.106	U-0.104	U-0.095	U-0.086	U-0.080 R13	U-0.074 R15	U-0.069 R15I	U-0.064 R17I	U-0.060 R18I	U-0.057 R20I	U-0.054 R20I
R-13	U-0.100	U-0.098	U-0.090	U-0.082 R13	U-0.076 R15	U-0.071 R15	U-0.066 R15I	U-0.062 R17I	U-0.058 R19I	U-0.055 R20I	U-0.052 R22I
R-15	U-0.094	U-0.093	U-0.085	U-0.078 R13	U-0.073 R15	U-0.068 R15I	U-0.063 R17I	U-0.060 R19I	U-0.056 R20I	U-0.053 R20I	U-0.051 R23I
R-19	U-0.088	U-0.086	U-0.080 R13	U-0.074 R15	U-0.069 R15I	U-0.064 R17I	U-0.060 R19I	U-0.057 R20I	U-0.054 R20I	U-0.051 R23I	U-0.049 R24I
R-21	U-0.085	U-0.084	U-0.077 R15	U-0.072 R15	U-0.067 R15I	U-0.063 R17I	U-0.059 R19I	U-0.056 R20I	U-0.053 R20I	U-0.050 R23I	U-0.048 R24I
R-25	U-0.081 R13	U-0.080 R13	U-0.074 R15	U-0.069 R15	U-0.064 R17I	U-0.060 R19I	U-0.057 R20I	U-0.054 R20I	U-0.051 R23I	U-0.049 R23I	U-0.046 R24I

Table 5. Floor U-Values

Insulation R-Value	Floor U-Value
R-0	0.249
R-7	0.096
R-11	0.072
R-13	0.064
R-15	0.057
R-19	0.047
R-21	0.044
R-26	0.037
R-30	0.033

Table 6. Basement U-Values^(a)

Insulation R-Value	Basement Wall U-Value	Insulation R-Value	Basement Wall U-Value
R-0	0.360	R-10	0.072
R-1	0.244	R-11	0.067
R-2	0.188	R-12	0.062
R-3	0.155	R-13	0.059
R-4	0.132	R-14	0.055
R-5	0.115	R-15	0.052
R-6	0.102	R-16	0.050
R-7	0.092	R-17	0.047
R-8	0.084	R-18	0.045
R-9	0.077	R-19	0.043
		R-20	0.041

(a) Insulation R-values represent the sum of exterior and/or interior insulation. Basement walls must be insulated from the top of the basement wall to 10 ft below ground level or to the floor of the basement, whichever is less.

Table 7. Slab F-Values

Perimeter Insulation R-Value	Slab F-Value	
	24-in. Insulation Depth	48-in. Insulation Depth
R-0	1.04	1.04
R-1	0.91	0.89
R-2	0.86	0.83
R-3	0.83	0.79
R-4	0.82	0.76
R-5	0.80	0.74
R-6	0.79	0.73
R-7	0.79	0.71
R-8	0.78	0.70
R-9	0.77	0.69
R-10	0.77	0.68
R-11		0.68
R-12		0.67
R-13		0.66
R-14		0.66
R-15		0.65
R-16		0.65
R-17		0.65
R-18		0.64
R-19		0.64
R-20		0.64

Table 8. Crawl Space Wall U-Values

Insulation R-Value	Crawl Space Wall U-Value
R-0	0.477
R-1	0.313
R-2	0.235
R-3	0.189
R-4	0.158
R-5	0.136
R-6	0.120
R-7	0.107
R-8	0.096
R-9	0.088
R-10	0.081
R-11	0.075
R-12	0.069
R-13	0.065
R-14	0.061
R-15	0.057
R-16	0.054
R-17	0.051
R-18	0.049
R-19	0.047
R-20	0.045

Table 9. U-Values for Windows, Glazed Doors, and Skylights^(a)

Frame/Glazing Features	Single Pane	Double Pane
Metal Without Thermal Break		
Operable	1.27	0.87
Fixed	1.13	0.69
Garden Window	2.60	1.81
Curtain Wall	1.22	0.79
Door	1.26	0.80
Skylight	1.98	1.31
Site-Assembled Skylight	1.36	0.82
Metal With Thermal Break		
Operable	1.08	0.65
Fixed	1.07	0.63
Curtain Wall	1.11	0.68
Door	1.10	0.66
Skylight	1.89	1.11
Site-Assembled Skylight	1.25	0.70
Reinforced Vinyl or Metal-Clad Wood		
Operable	0.90	0.57
Fixed	0.98	0.56
Door	0.99	0.57
Skylight	1.75	1.05
Wood/Vinyl/Fiberglass		
Operable	0.89	0.55
Fixed	0.98	0.56
Garden Window	2.31	1.61
Door	0.98	0.56
Skylight	1.47	0.84
Glass Block Assemblies	0.60	

(a) The U-values in these tables can be used in the absence of test U-values. The product cannot receive credit for a feature that cannot be clearly detected. Where a composite of materials from two different product types is used, the product must be assigned the higher U-value.

Table 10. U-Value Table for Non-Glazed Doors^(a)

Steel Doors		
Without Foam Core	0.60	
With Foam Core	0.35	
Wood Doors	Without Storm	With Storm
Panel With 7/16-in. Panels	0.54	0.36
Hollow Core Flush	0.46	0.32
Panel With 1-1/8-in. Panels	0.39	0.28
Solid Core Flush	0.40	0.26

(a) The U-values in these tables can be used in the absence of test U-values. The product cannot receive credit for a feature that cannot be clearly detected. Where a composite of materials from two different product types is used, the product must be assigned the higher U-value.

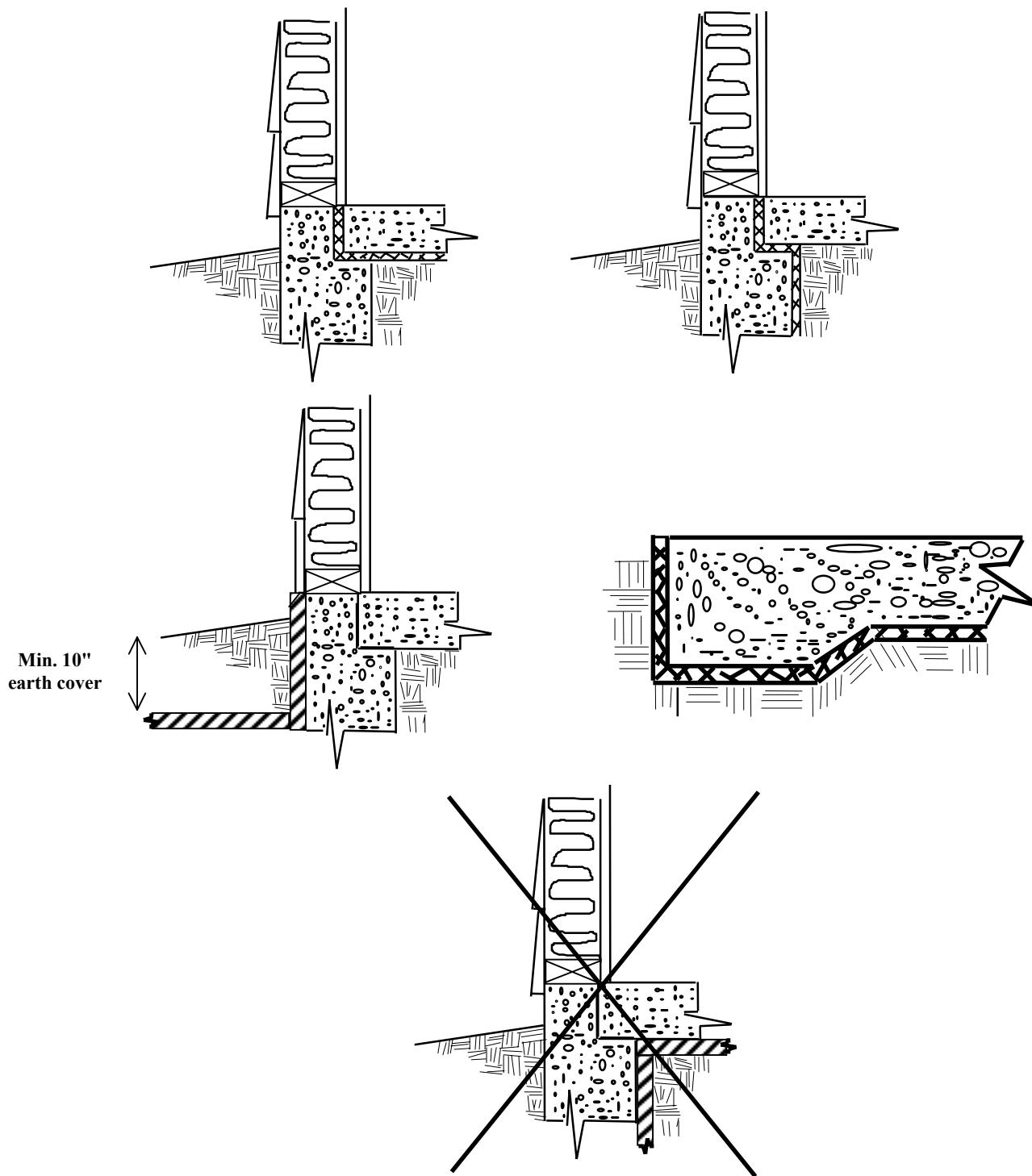
Typical Thermal Properties of Building Materials--Design Values^a

Description	Density, lb/ft³	Resistance (R)	
		Per Inch Thickness	For Thickness Listed
SHEATHING			
Gypsum or plaster board	1/2"	50	--
Gypsum or plaster board	5/8"	50	--
Plywood (Douglas Fir)	1/2"	34	--
Plywood (Douglas Fir)	5/8"	34	--
Plywood or wood panels	3/4"	34	--
Vegetable fiber board			
Sheathing, regular density.....	1/2"	18	--
Hardboard			
Medium density.....		50	1.37
Particleboard			
Medium density		50	1.06
FINISH FLOORING MATERIALS			
Carpet and rubber pad		--	--
INSULATING MATERIALS			
<i>Blanket and Batt</i>			
Mineral fiber, fibrous form processed from rock, slag, or glass			
approx. 3-4 in.	0.4-2.0	--	11
approx. 3.5 in.....	0.4-2.0	--	13
approx. 3.5 in.....	1.2-1.6	--	15
approx. 5.5-6.5 in.....	0.4-2.0	--	19
approx. 5.5 in.....	0.6-1.0	--	21
approx. 6-7.5 in.....	0.4-2.0	--	22
approx. 8.25-10 in.....	0.4-2.0	--	30
approx. 10-13 in.....	0.4-2.0	--	38
<i>Board and Slabs</i>			
Glass fiber, organic bonded.....	4.0-9.0	4.00	--
Expanded polystyrene, extruded (smooth skin surface).....	1.8-3.5	5.00	--
Expanded polystyrene, molded beads.....			
1.0	3.85	--	
1.25	4.00	--	
1.5	4.17	--	
1.75	4.17	--	
2.0	4.35	--	
Cellular polyurethane/polyisocyanurate	1.5	6.25-5.56	--
Cellular polyisocyanurate (CFC-11 exp.) (gas-impermeable facers)	2.0	7.04	--
Mineral fiberboard, wet felted			
Acoustical tile.....	18.0	2.86	--
<i>Loose Fill</i>			
Cellulosic insulation (milled paper or wood pulp).....	2.3-3.2	3.70-3.13	--
Perlite, expanded.....			
2.0-4.1	3.7-3.3	--	
4.1-7.4	3.3-2.8	--	
7.4-11.0	2.8-2.4	--	
Mineral fiber (rock, slag, or glass)			
approx. 3.75-5 in.....	0.6-2.0	--	11.0
approx. 6.5-8.75 in.....	0.6-2.0	--	19.0
approx. 7.5-10 in.....	0.6-2.0	--	22.0
approx. 10.25-13.75 in.	0.6-2.0	--	30.0
Mineral fiber (rock, slag, or glass)			
approx. 3.5 in. (closed sidewall application).....	2.0-3.5	--	12.0-14.0
Vermiculite, exfoliated.....			
7.0-8.2	2.13	--	
4.0-6.0	2.27	--	
<i>Spray Applied</i>			
Polyurethane foam	1.5-2.5	6.25-5.56	--
Ureaformaldehyde foam.....	0.7-1.6	4.55-3.57	--
Cellulosic fiber	3.5-6.0	3.45-2.94	--
Glass fiber	3.5-4.5	3.85-3.70	--
ROOFING			
Asphalt shingles	70	--	0.44
PLASTERING MATERIALS			
Cement plaster, sand aggregate	116	0.20	--
0.75 in.	--	--	0.15
MASONRY MATERIALS			
<i>Masonry Units</i>			

Description	Density, lb/ft ³	Resistance (R)	
		Per Inch Thickness °F . ft ² . h	For Thickness Listed
Brick, fired clay.....	150	0.12-0.10	--
Concrete blocks			
Normal weight aggregate (sand and gravel)			
8 in., 33-36 lb, 126-136 lb/ft ³ concrete, 2 or 3 cores.....	--	--	1.11-0.97
Same with perlite filled cores	--	--	2.0
Same with vermiculite filled cores.....	--	--	1.92-1.37
12 in., 50 lb, 125 lb/ft ³ concrete, 2 cores	--	--	1.23
Concretes			
Sand and gravel or stone aggregate concretes	150	0.10	--
SIDING MATERIALS (on flat surface)			
<i>Siding</i>			
Asphalt roll siding	--	--	0.15
Hardboard siding, 7/16"	--	--	0.67
Wood, drop, 1 by 8 in.	--	--	0.79
Aluminum, steel, or vinyl, over sheathing			
Hollow-backed.....	--	--	0.61
Insulating-board backed nominal 3/8"	--	--	1.82
Insulating-board backed nominal 3/8", foil backed	--	--	2.96
WOOD			
Maples, oak and similar materials	45	0.91	
Fir, pine and similar materials	32	1.25	
3/4"	32	0.94	
1-1/2"	32	1.9	
3-1/2"	32	4.4	
5-1/2"	32	6.9	
7-1/4"	32	9.1	
9-1/4"	32	11.6	
11-1/4"	32	14.1	

^aValues are for a mean temperature of 75°F. Representative values for dry materials are intended as design (not specification) values for materials in normal use. Thermal values of insulating materials may differ from design values depending on their in-situ properties (e.g., density and moisture content, orientation, etc.) and variability experienced during manufacture. For properties of a particular product, use the value supplied by the manufacturer or by unbiased tests in accordance with s. Comm 22.31.

s. Comm 22.26
Slab-On-Grade Insulation Details



Insulation shall extend vertically and horizontally for a total of 48". In all cases the insulation shall insulate to the top edge of the floor perimeter. The last diagram is not an acceptable method.

WISCONSIN UNIFORM DWELLING CODE PLAN REVIEW AND INSPECTION CHECKLIST

Project Address: _____

Owner: _____ Permit #: _____

Builder: _____

Local Requirements (Zoning, Sanitary, Etc.)

Chapter 21 – CONSTRUCTION STANDARDS

Design

21.03 Exits, Doors and Hallways

- | | | | |
|------|--|-------|---|
| ____ | (1) Min. two exits from first floor | _____ | One-half of bedrooms – 2'8" x 6'8" door |
| ____ | (2)(b) Egress windows from 2 nd floor bedrooms or two exits from second clear opening floor | _____ | One full bathroom – 2'8" x 6'8" door |
| ____ | (6m) Min. 20" x 24" | _____ | Common use areas – 2'8" door or 2'6" passageway |
| ____ | 46" sill height A.F.F. or platform | _____ | (9) Hallway – 3' wide |
| ____ | (3) Two exits from 3 rd floor | _____ | (10)(a) Exit Balconies – treated wood |
| ____ | (4) Lofts | _____ | (10)(b) Guardrail 3' min., intermediate rails |
| ____ | More than 400 sq. ft. then stairway | _____ | (10)(c) Maximum floor height 15' above grade |
| ____ | If 400 sq. ft. or less, then ladder okay | _____ | (10)(d) Minimum 3' x 3' |
| ____ | (5) Egress windows from basement bedrooms or two exits from floor | _____ | 21.04 Stairs |
| ____ | (6) If ground floor used for sleeping, then exit to grade and another exit or bedroom egress windows | _____ | (4) Landings min. 3' in travel direction |
| (7) | Doors | _____ | (4)(c) Landing between door at head and foot of all stairs except in accordance with 1. 2., 3., or 4. |
| ____ | Main exit – 3' x 6'8" | _____ | (3)(a) Handrails on stairs of more than three risers |
| ____ | Second exit – 2'8" x 6'4" | _____ | (3)(a) At least one provided |
| ____ | Sliding exit patio doors min. 2'6" clear | _____ | (3)(a) Provided on all open sides |
| (8) | Interior Circulation | _____ | (3)(b) Between 30" and 38" above nosing |
| | | _____ | (3)(a) To prevent passage of objects over 6" dia. |
| | | _____ | (3)(b) 2. 1 1/2" clearance between rail and wall |

- _____ (3)(a) Withstand 200 lb. load in any direction
- _____ (3)(c)1. Guardrails at elevation changes of over 24"
- _____ (3)(c)2. At least 36" above floor
- _____ (3)(a) To prevent passage of objects over 6" dia.
- _____ (2) Stairway Details
 - _____ (2)(a) 3' wide
 - _____ (2)(d) Min. headroom of 6'4"
 - _____ (2)(b)&(c) Max. riser of 8", min. tread of 9"
 - _____ (2)(c)3.,4. Winders per code
 - _____ (2)(a)2. Spiral stairs per code
- 21.042 Ladders**
 - _____ Table 21.042 Ladders dimensions
- 21.045 Ramps**
 - _____ (1)-(4) Ramps details
- 21.05 Light and Ventilation**
 - _____ (1) 8% glazed openings in habitable rooms (bedrooms in basements only)
 - _____ (2)(a) 3.5% openable windows in all habitable rooms, kitchens and baths (or one air change per hour mech. vent.)
 - _____ (2)(b) Exhaust hoods terminate outside of dwelling
 - _____ (4)(a),(b) Crawlspace vented, vapor barrier, organic matter removed
 - _____ (5) Safety glass in doors and sidelights
- 21.06 Ceiling Height**
 - _____ Ceiling height-min. 50% of at least 7'
- 21.07 Attic and Crawlspace**
 - _____ Attic or crawlspace access at least 14" x 24"
- 21.08 Fire Separation and Living Unit Separation**
 - _____ (1) Tenant separation
 - _____ (1)(d) Chases and openings
 - _____ (1) Garage separation per Table 21.08
 - _____ (1)(a) 45 min. wall and ceiling separation
 - _____ (1)(c) 20 min. door, solid core or metal
- 21.085 Fireblocking**
 - _____ (1)(a) At floor levels

- _____ (1)(b) At connections between concealed vertical and horizontal spaces
- _____ (1)(c) At top and bottom of stairway stringers
- 21.09 Smoke Detectors**
 - _____ (1)(a) One inside each sleeping room
 - _____ (1)(b) One alarm in the vicinity of each sleeping area
 - _____ (1)(c) One each floor include basement
- 21.10 Decay-Resistant Wood**
 - _____ (2)(b) Joists less than 18" from earth
 - _____ (2)(c) Girders less than 12" from earth
 - _____ (2)(d) Sills less than 8" from earth
 - _____ (2)(e) Siding less than 6" from earth
- 21.11 Foam Plastic Insulation**
 - _____ (1)(b) Protected with 15 min. thermal barrier
- Footings and Foundation Inspection**
 - 21.12 Grade**
 - _____ Slope away from dwelling
 - 21.13 Excavations**
 - _____ Proper protection adjacent property
 - 21.14 Excavations For Footing And Foundation**
 - _____ (1) No excavations below footings unless provisions are taken to prevent collapse
 - _____ (2) Soil undisturbed or compacted; no organics
 - 21.15 Footings**
 - _____ (1)(a) Continuous – 4" wider than wall, 8" deep
 - _____ (1)(b) Column – 2' x 2', 12" deep min.
 - _____ (1)(c) Trench (frost wall) – 8" wide min.
 - _____ (1)(d) Chimney and fireplace – 4" on each side, 12" deep min.
 - 21.16 Frost Penetration**
 - _____ Bottom of footing at least 48" below grade
 - _____ No footings placed on frozen soil
 - 21.17 Drain Tiles (Where Required)**
 - _____ (3)(d)4. Exterior tile on 2" gravel, covered with 12" gravel plus 12" out from tile
 - _____ (3)(b) Basement floor on 4" gravel

- | | |
|--|---|
| <p>_____ (3)(d)5. Interior tile connected to exterior tile with 3" diameter bleeders every 8' min.</p> <p>_____ (3)(d)6. Tile to sump pitched 1/8" per ft.</p> <p>_____ (3)(e) Drain tile discharge per s. Comm 82.36</p> <p>21.18 Foundation</p> <p>General</p> <p>_____ As wide as supported wall</p> <p>_____ (1)(b)&(c) Lateral support at bottom (slab) and top (anchored floor)</p> <p>_____ (2) Concrete – per Table 21.18-A – min. 3000 psi concrete</p> <p>_____ (3)(b)1. Unreinforced masonry per Table 21.18-C</p> <p>_____ (3)(b)5.,6. Masonry reinforced w/rebar per Table 21.18-D, E, & F</p> <p>_____ (1)(b) Lateral support at top and base of wall</p> <p>21.20 Concrete Floors</p> <p>_____ (1) At least 3" thick</p> <p>_____ (2) 4" base course over clay soils</p> <p>21.205 Wood basement floors</p> <p>_____ Wood foundation – per NFPA Tech Report #7 – No galvanized fasteners</p> <p>Framing Inspection</p> <p>21.22 Floors</p> <p>_____ (1) Joists sized per span tables (size, grade spacing)</p> <p>_____ (1)(1m) Sill plates</p> <p>_____ Any sill plates anchored</p> <p>_____ (a)3. Masonry walls – Min. sill plate 2" x wall width or solid top course</p> <p>_____ (4)(b) Truss joists properly installed (bearing points)</p> <p>_____ (4)(a)2. Girders or beams sized per Table 21.22-A1 or -A2</p> <p>_____ (4)(a)2. Beam anchored to posts</p> <p>_____ (4) Bearing</p> <p>_____ (a)1.a. 1 1/2" on wood, 3" on concrete or masonry</p> <p>_____ (a)1.c. Max. joist tail ends equal to depth of joist</p> <p>_____ (5) Notching and boring complies with this section</p> | <p>_____ (6) Overhangs</p> <p>_____ (6)(a) Max. 2' where floor joists extend over wall</p> <p>_____ (6)(b) Lookout joists attached properly</p> <p>_____ (7) Floor openings</p> <p>_____ Doubled trimmers and headers if header over 4'</p> <p>_____ Hangers, beams or partition wall support if header over 6'</p> <p>_____ Hangers or ledger for tail joists over 8'</p> <p>_____ (8) Floor sheathing per Tables 21.22-B – E</p> <p>_____ (8)(a) Plywood deck to have blocking, underlayment, wood strip flooring or T&G edges</p> <p>_____ (9) Bridging every 8' unless not required</p> <p>Walls</p> <p>21.24 Exterior Walls</p> <p>_____ (1). Permanent weather-resistant wall covering</p> <p>_____ (2) During construction requirements</p> <p>21.25 Wood Frame Walls</p> <p>_____ (1)(a) Stud size, grade and spacing per Table 21.25-A</p> <p>_____ (1)(b) Posts or multiple studs at corners</p> <p>_____ (1)(b) Corner bracing</p> <p>_____ (2) Proper top plate</p> <p>_____ (3)(a) Header size per Tables 21.25-B, C or D</p> <p>_____ (3)(b) Doubled shoulder stud for headers over 6' in bearing wall</p> <p>_____ (3)(b)3. Double shoulder stud for headers over 6'</p> <p>_____ (4) Stud not notched more than 1/3 of depth</p> <p>_____ (5) Load bearing partition over proper support</p> <p>_____ (6) Post and columns</p> <p>21.26 Masonry Walls</p> <p>_____ (1) Proper cold weather work measure</p> <p>_____ (3) Proper mortar per Table 21.26-A</p> <p>_____ (7) Masonry Veneers</p> <p>_____ (7)(a)1. Max. corbel of 1"</p> |
|--|---|

- ____ (7)(a)2. Maintain air space
- ____ (7)(a)3. Brick ledge or base flashing
- ____ (7)(a)4. Weepholes every 3'
- (8) Veneer Anchorage
 - ____ (8)(a)1. Corrugated ties
 - ____ Max. veneer unit size of 1 sq. ft.
 - ____ Tie every 2 sq. ft.
 - ____ Embedded 2" in joint
 - ____ (8)(a)2. 1/4" dia. bolts for large units
 - ____ Each veneer unit w/3 anchors-or-units doweled to each other and wall anchor every 6 sq. ft.
 - ____ (8)(b) Option-adhesive anchorage properly done
 - ____ (9) Framing member bearing-min. of 3"

Roofs and Ceilings

21.27 Roof Design

- ____ (1) Rafters and joists sized per span tables (size, grade, spacing)
- ____ (2) Uplift & suction forces
- ____ (3)(a)1. Proper protection from water, 15 lb. felt
- ____ (3)(b) Eave protection-for roofs with less than 4:12 pitch
- ____ (4)(b) Crickets if chimney over 30" wide

21.28 Framing

- ____ (1)(a) 2X ridge board if rafters offset
- ____ (2) Anchorage and collar ties every third rafter
- ____ (4) Hip & valley rafters 2" wider than commons
- ____ (4)(a) Doubled valley rafters unless supported
- (5) Trusses
 - ____ Wood grade marks per plan
 - ____ Proper load rating
 - ____ Bearing as indicated
 - ____ Diag. supports to end walls as indicated
 - ____ Lateral support as indicated
 - ____ Lateral support of bottom chord as indicated
 - ____ No field modifications

- ____ (6) Proper notching and boring of joists
- ____ (7) Roof sheathing sized properly Edges supported or clipped w/proper gap

Fireplace Requirements

21.29 Masonry Fireplaces

- ____ (1) Flue size per Table 21.29
- ____ (3) Firebox
 - ____ Box of 1/4" metal, listed or 2" firebrick
 - ____ Walls at least 8" thick
- ____ (6) Hearth extension per Table 21.29-1
- ____ (11) Combustible trim
 - ____ None within 6" of opening
 - ____ Combustibles between 6" and 12" of opening not to project more than 1/8" per inch from opening
- ____ (12) Combustible framing 2" away

21.30 Masonry Chimneys – See Chapter 23 Checklist

21.32 Factory-Built Fireplaces

- ____ Listed
- ____ (1) Installed per listing include clearances
- ____ (2) Distances from combustibles
- ____ (3) Hearth extension

Chapter 22 ENERGY CONSERVATION STANDARDS

22.03 Insulation

22.05 Fenestration Certification

22.07 Design Temperatures

22.08 Ventilation and Moisture Control

22.10 22.11 Calculating Loads and Procedures

Subchapter VI, Dwelling Envelope Designs

22.21 Envelope Requirements

22.22 Vapor Retarders

22.23 Walls

22.24 Roof and Ceiling

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22.25 Floors Over Unheated Spaces

22.26 Slab On Grade Floors

22.27 Crawlspace Walls

22.28 Basement Walls

- 22.30 Air Leakage**
- 22.32 Recessed Lighting Fixtures**
- 22.34 Energy Analysis**
- Chapter 23 – HVAC STANDARDS**
- 23.02 Design**
- _____ (1) Heating and cooling system design
 - _____ (2) Distribution systems
 - _____ (3) Ventilation
 - _____ (4) Controls
- 22.03 Heating System**
- 23.04 Equipment**
- _____ (1) Furnaces
 - _____ (1)(b) No unvented combustion heaters
 - _____ (4) Location
- 23.045 Solid-Fuel-Burning Appliances**
- _____ (1) Listed appliances
 - _____ (3) Vented to its own lined masonry chimney or factory-built chimney
 - _____ (4) Chimney connector
 - _____ (4)(a) Chimney material
 - _____ (4)(b) 18" clearance to unprotected combustibles (9" if protected w/sheet metal spaced 1" out)
 - _____ (4)(d) Joints secured with 3 screws or rivets
 - _____ (4)(d) Sized to appliance collar
 - _____ (4)(e) Not run through any floor, ceiling, window, door or combustible wall or concealed in closet or attic
 - _____ (4)(e) May pass through combustible wall if protected w/thimble of diameter 12" more than connector
 - _____ (4)(f) Damper installed
 - _____ (5) Floor protection per Table 23.04-C for 18" all around
 - _____ (6) Appliance clearance of 36" to combustibles unless listed for less
 - _____ (6)(b) Appliance clearance may be reduced per Table 23.045-E
 - _____ (9)(a) Duct and plenum clearances per Table 23.045-F
- 23.06 Combustion Air**
- _____ (1) Scope
 - _____ (2) Methods for providing air
- 23.08 Ductwork**
- _____ (1) Ducts not used for other purpose
 - _____ (1)(a) No nonmetallic ducts for kitchen hoods or within 6' of furnace
 - _____ (2)(b) Underfloor plenums per this section
 - _____ (4) Underground perimeter ducts insulated to R-5
 - _____ (7) Proper duct support
- 23.09 Dampers, Registers and Grilles**
- _____ (1) Backdraft dampers on supply ducts to garage
 - _____ (2)(b) No return grilles in bathrooms, kitchens, garages
- Subchapter V, Chimneys and Vents**
- 23.11 General**
- _____ (2) Chimney terminates 3' above roof and 2' above any portion of roof within 10'
- 23.12 Masonry Chimneys (See Comm 21.30)**
- _____ (1) Shall rest on footing
 - _____ (1) Min. of 4" thick wall
 - _____ (2) Flue as big as chimney connector
 - _____ (3) 4" separation between flues
 - _____ (6) Cleanout opening
 - _____ (7) Proper flue liner
 - _____ (9) Proper clearances – 2" for interior chimneys, 1/2" for exterior chimneys
- 23.15 Chimney Connectors**
- _____ (2)(a) Not run through any window, door, outside combustible wall, closet or attic
 - _____ (2)(a) May pass through combustible wall if protected with proper thimble
 - _____ (2)(c) Pitch and length
 - No more than 2 - 45° offsets
 - Horizontal run no more than 75% of chimney's vertical rise
 - Pitched at least 1/4" per foot
 - _____ (2)(d) No manual damper
 - _____ (2)(e) Thickness per Table 23.15-A or B
 - _____ (2)(f) Clearance per Table 23.15-C
- 23.155 Multiple Automatic Appliance Venting**
- _____ (1) Same fuel type
 - _____ (1) - Located in same story

- ____ (2) - Y manifold or chimney inlets offset by 12" vertically or at right angles to each other
- ____ (3) - Flue and common connector sized to largest feeder connector and 1/2 of smaller connector

23.18 Operation

____ Appliance manual left at location

23.156 Condensate Drains

____ Into sanitary drain system

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